DOCUMENT RESUME

ED 257 558 PS 015 151

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TITLE The Development of Private Speech: A Review of Empirical Evidence Addressing Vygotsky's Theoretical Views.
PUB DATE Apr 85
NOTE 19p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (Toronto, Ontario, Canada, April 25-28, 1985).
PUB TYPE Information Analyses (070) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Language Acquisition; Language Research; Literature Reviews; *Problem Solving; *Self Control; *Social Influences; *Test Validity; Theories; Young Children
IDENTIFIERS Developmental Patterns; *Private Speech; *Vygotsky (Lev S)

ABSTRACT

This paper examines the validity of Vygotsky's interpretation of the private speech (PS) phenomenon on the basis of findings reported in the literature. A review of available findings provided support for an age-related shift from overt to covert means of verbal self-regulation and for an interpsychological to intrapsychological shift in the regulation of problem-solving behaviors. Several studies reported increases in self-regulatory PS following increases in task difficulty. Although correlational data suggested that these increases were associated with more successful task performance, further support for a self-guidance function was absent in studies that more directly examined the degree of correspondence between overt verbalizations and problem-solving behaviors. Relatively little support was found for the curvilinear developmental hypothesis. A lack of self-regulatory PS was not a distinctive feature of impulsive children, who instead exhibited more task-irrelevant PS. Inconsistent findings hindered an interpretation of the influence of others upon the occurrence of PS. The relative absence of pertinent data precluded any appraisal of whether PS undergoes developmental changes in structure. While the above findings provided some basis for questioning the overall validity of Vygotsky's theoretical framework, this conclusion was tempered by a consideration of several methodological difficulties noted among the reviewed studies. (Author/RH)

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ED257558

The Development of Private Speech: A Review of Empirical Evidence Addressing Vygotsky's Theoretical Views

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ABSTRACT

This paper examines the validity of Vygotsky's interpretation of the private speech (PS) phenomenon on the basis of findings reported in the literature. A review of available findings provided support for an age-related shift from overt to covert means of verbal self-regulation and for an interpsychological to intrapsychological shift in the regulation of problem-solving behaviors. Several studies reported increases in self-regulatory PS speech following increases in task difficulty. Although correlational data suggested that these increases were associated with more successful task performance, further support for a self-guidance function was absent in studies that more directly examined the degree of correspondence between overt verbalizations and problem-solving behaviors. Relatively little support was found for the curvilinear developmental hypothesis. A lack of self-regulatory PS was not a distinctive feature of impulsive children, who instead exhibited more task-irrelevant PS. Inconsistent findings hindered an interpretation of the influence of others upon the occurrence of PS. The relative absence of pertinent data precluded any appraisal of whether PS undergoes developmental changes in structure. While the above findings provided some basis for questioning the overall validity of Vygotsky's theoretical framework, this conclusion was tempered by a consideration of several methodological difficulties noted among the reviewed studies. In addition to its impact upon developmental theory, clarification of the functional role served by PS bears impact upon the use of clinical therapy approaches derived from Vygotsky's theoretical premises.

INTRODUCTION

Young children have a tendency to engage in private speech (PS). That is to say, they sometimes produce verbalizations that do not appear to be intended for, nor adapted to, the listening needs of others, who may or may not be present.

Piaget (1923/1955) and Vygotsky (1934/1962) were among the first theorists to take serious note of this phenomenon. In Piaget's estimation, PS was a manifestation of the young child's immature, or egocentric, thought development. While Vygotsky also recognized that a relationship existed between PS and later cognitive development, he differed with Piaget by emphasizing the adaptive value of PS. In particular, Vygotsky believed that PS served a self-regulatory function in the young child's development.

Generally speaking, Vygotsky's theoretical viewpoint has been relatively more influential than Piaget's in generating interest in the PS phenomenon. Despite such interest, comprehensive appraisal of this theoretical framework for the most part has been limited to the work of Kohlberg and his associates (Kohlberg, Yaeger, & Hjertholm, 1968). One factor that seems to have impeded similar research efforts is that detailed knowledge of Vygotsky's theory has been difficult to obtain. Contributing to this situation is the relative dearth of English translations of Vygotsky's writings.

Zivin's (1979) clear articulation of Vygotsky's PS views has alleviated this problem to some extent. Given that it is now possible to identify a more complete range of testable hypotheses, comprehensive evaluation of Vygotsky's theory would seem to be in order. The purpose of the present paper is to conduct such an appraisal. In the pages that follow, PS hypotheses specifically stated by Vygotsky, as well as those implicit in his theoretical framework, are presented and evaluated on the basis of empirical findings that have been reported in the literature.

DEVELOPMENTAL COURSE OF PRIVATE SPEECH

Hypothesis

PS follows a curvilinear developmental course: it first appears at two years of age and increases in frequency through five or six years; thereafter, it decreases steadily and essentially disappears by eight years of age.

Evidence

Indirect evidence may be gleaned from comparisons of studies in which only a portion of the two to eight year range was examined. Although percentages were not reported, PS has been detected among children as young as 23 to 25 months of age (Furrow, 1981). Based upon observations of two-year-old twins, Keenan (1974) estimated that only 6.6% of all verbalizations were of a PS quality. Garvey and Hogan (1973) found a 50% to 60% incidence of PS among three- to five-year-old children. Goodman (1981) cited a 71% incidence of PS among four-year-olds. Berner (1971) reported an increase in children's use of PS from three (58%) to four (67%) to five (70%) years of age. Beaudichon (1973), however, failed to detect PS differences between five- and seven-year-old children. Contrary to expectations, Flavell, Beach, and Chinsky (1966) cited an age-related increase in spontaneous PS among kindergarten, second, and fifth grade children. Pechman (1978) reported unexpectedly high frequencies of PS (30% to 40%) among seven- to ten-year-old children. Berk and Garvin (1984) also documented relatively high use of PS by ten-year-old Appalachian children.

Additional evidence may be derived from studies that utilized subjects whose ages more closely approximated the complete two to eight year range. Kohlberg, Yaeger, and Hjertholm (1968) cited support for the curvilinear hypothesis based upon a cross-sectional analysis of four- to ten-year-old children. Piaget (1923/1955), however, detected a linear decline from three

(56%) to seven (27%) years of age. Rubin (1979) found relatively constant frequencies of PS among four- (26%), six- (19%), eight- (20%), and eleven- (17%) year-old children. Klein (1964) and Dickie (1973) also reported nonsignificant PS differences among three- to seven-year-old children and among two- to eight-year-old children, respectively.

Discussion

Generally speaking, the results from the above studies do not lend support to the contention that PS follows a curvilinear developmental course. Some investigators, however, have qualified this conclusion by citing evidence that supports a curvilinear hypothesis when mental age, rather than chronological age, is considered (Deutsch & Stein, 1972; Kleiman, 1974; Kohlberg et al., 1968). An additional qualification stems from a consideration of the possibility that specific PS categories (i.e., self-regulatory types), rather than global PS indices, may follow a curvilinear course (Rubin, 1979). In line with these findings are the consistent reports of an age-related increase in displays of inaudible mutterings, which lends support to the notion of a developmental shift from overt to covert means of verbal self-control (Dickie, 1973; Kleiman, 1964; Kohlberg et al., 1968).

In any subsequent developmental analyses of PS, attention should be directed towards the relationship between mental age and specific PS categories. In addition, consideration should be given to the use of longitudinal designs in place of cross-sectional designs, which sometimes cloud the developmental picture.

TASK-RELATED FACTORS INFLUENCING PS PRODUCTION

Hypothesis

Changes in task demands that make solutions less direct and goals more difficult to obtain generally lead to increased PS production.

Evidence

Kohlberg et al. (1968) reported that four- and five-year-old children produced more PS when engaged in problem-solving tasks versus when engaged in cognitively less demanding fine motor tasks. A more detailed analysis revealed that this increase resulted primarily from a higher percentage of self-regulatory types of PS. In a similar vein, Syrinka (1934) noted that visual-motor activities led to more labeling statements and ongoing descriptions, whereas problem-solving tasks tended to elicit statements emphasizing planning and evaluation. Goodman (1981) and Zivin (1972) observed increased PS production following children's failures on problem-solving tasks. Significant increases in task-relevant PS also have been detected as a function of increased difficulty on academic (Berk & Garvin, 1984; Roberts, 1979), seriation and classification (Beaudichon, 1973), and delayed match-to-sample (Murray, 1979) tasks. To some extent, these results were moderated by chronological age and intelligence. For example, more difficult tasks led to significantly more PS among five-year-olds, but not among seven-year-olds (Beaudichon, 1973). Intellectually less competent children emitted more evaluative PS throughout all phases of their performance, whereas brighter children produced this type of PS only after completing a given task (Roberts, 1979).

In addition to investigations that imposed external demands, some studies have assessed the influence of varying task demands in the context of naturalistic play settings in which children set their own goals. For example,

Rubin (1979) observed more PS when preschool children were engaged in either exploratory, constructive, or transitional play. Dickie (1973) found a higher incidence of outer-directed PS during unstructured free play; relatively more inner-directed speech was produced during externally imposed puzzle-solving and coloring tasks.

Discussion

The available evidence was derived from studies that varied across a wide range of age groups, tasks, and settings. Despite such variability, the data are consistent in suggesting that changes in task demands (i.e., increased cognitive complexity) are related to increased PS production. Of particular importance is that the observed increases in PS production were mainly the result of a higher incidence of self-regulatory types of PS. While there is some evidence to suggest that younger children are more likely to employ PS in response to increased task demand, further research is necessary to clarify the role of chronological age. Likewise, additional empirical attention should be directed towards the role played by intelligence.

SELF-REGULATORY FUNCTION OF PS

Hypothesis

Production of self-regulatory types of PS contributes to more effective problem-solving and to increased control over impulsive behaviors.

Evidence

Increased use of self-regulatory types of PS has been related to superior performances on puzzles (Dickie, 1973), finger mazes (Zivin, 1972), and seriation tasks (Beaudichon, 1973). Klein (1964) observed a higher proportion of task-relevant PS among children who successfully completed a puzzle task

versus those who did not (70% and 48%, respectively). Task-relevant PS also has been associated with successful performance on delayed match-to-sample tasks (Murray, 1979) and on sentence completion tasks (Roberts, 1979).

Meichenbaum (1971) observed twice as much PS among impulsive preschoolers, relative to reflective peers, in a free play setting. This difference was attributed to a predominance of self-stimulating comments among the impulsives; reflectives verbalized relatively more self-guiding PS. Dickie (1973) also found that impulsive two- to eight-year-old children utilized significantly more self-stimulating and outer-directed types of PS; there were no differences, however, with respect to self-guiding or other types of inner-directed PS. Discrepant from these findings were Kleiman's (1974) report of more task-irrelevant (i.e., humming) PS among reflective four-year-olds working on problem-solving tasks and Goodman's (1977) report of no relationship between PS and cognitive impulsivity among preschoolers. With respect to clinical populations, Copeland (1979) noted that hyperactive boys used significantly more task-irrelevant PS during solitary free play. In line with these results was Camp's (1977) observation of significantly more task-irrelevant PS among aggressive first and second grade boys. Campbell (1973) also found that hyperactive children produced more evaluative PS relative to impulsive and reflective peers from a nonclinical population.

Discussion

There would appear to be support for the contention that increases in self-regulatory PS production are related to increased levels of success on problem-solving tasks. While differences in self-regulatory PS output do not seem to exist either between reflectives and impulsives or between clinical and normal populations, there is evidence to suggest that impulsive children, as well as certain clinical populations (i.e., hyperactive, aggressive), utilize

relatively more PS that is of a distracting, task-irrelevant quality.

It is important to bear in mind that the above conclusions are based upon correlational findings. Thus, while it may be the case that increased use of self-regulatory PS facilitates problem-solving attempts and/or control over general behavior, other factors may be more responsible for these circumstances. One way to evaluate the self-regulatory function of PS more directly would be to demonstrate that PS precedes/accompanies action and that such action corresponds to its communicative intent. Along these lines, Goodman (1981) and Roberts (1979) found that more than 70% of children's PS preceded/accompanied some type of action. However, neither Goodman (1981) nor Roberts (1979) was able to identify any consistent pattern of correspondence between self-regulatory types of PS and subsequent action.

Until further research is directed towards an analysis of the temporal sequencing and correspondence issues, the question of whether or not PS facilitates problem-solving/behavioral self-control must remain open to speculation.

INTERPSYCHOLOGICAL TO INTRAPSYCHOLOGICAL SHIFT

Hypothesis

The behavior of very young children is guided primarily by the verbalizations of parents and other caretakers. As they grow older, children begin to assume increasingly more responsibility for regulating their own behavior by means of PS, which resembles the verbal direction provided by adults during earlier collaborative experiences.

Evidence

Only two studies have addressed this matter directly. In each of these cross-sectional investigations (Wertsch, 1979; Wertsch, McNamee, McLane, &

Budwig, 1980), two- to four-year-old children worked on a matching task in the presence of their mothers. The number of child-initiated gazes to the model and the number of times that the mother verbally or gesturally referred to the model were used as indices of self-regulation and other-regulation, respectively. The results showed that younger children required and received more maternal assistance in completing the task, whereas older children exhibited more self-regulated problem-solving behavior. Further analysis of the verbal exchanges among the mother-child dyads revealed semantic similarities between the PS of the older children who independently solved the task and the social speech used by mothers to assist children requiring supervision.

Discussion

While providing supportive evidence, the above studies are limited by the cross-sectional nature of their designs. A more convincing demonstration of support would come from longitudinal extensions of the procedures implemented by Wertsch and his associates. In addition to this consideration, subsequent investigations might benefit from including the following: a more detailed analysis of specific PS categories, controls for differences in intellectual maturity among children, and a broader range of situations in which parent-child dyads interact.

SOCIAL FACTORS INFLUENCING PS PRODUCTION AND STRUCTURE

Hypothesis

Because of its social origins, PS occurs most often in the presence of others with whom verbal collaboration is a possibility. Early PS takes on the structural appearance of its predecessor, the child's social speech; later PS more closely resembles the abbreviated structure of its successor, the child's verbal thought.

Evidence

In a study that varied the degree of possible verbal collaboration with peers (i.e., familiar peers, unfamiliar peers, unfamiliar foreign peers, unfamiliar deaf-mute peers), Vygotsky (1934/1962) observed approximately six to eight times more PS when children were in the company of familiar peers, relative to all other groups. Mixed results have emerged from investigations that varied opportunities for collaboration by including either peers or adults in the company of the children under study. Rubin and his associates (Rubin, Hultsch, & Peters, 1971) found no differences in PS production under these conditions. Others, however, detected relatively more PS when children were in the company of peers (Berk & Garvin, 1984; Dickie, 1973; Kohlberg et al., 1968). Inconsistent findings also have arisen from studies in which children were either alone or in the company of others. Berner (1971) and Moritsugu (1977) reported increased PS production when children were in the presence of others. In contrast, Martlew and associates (Martlew, Connolly, & McCleod, 1978), as well as Rubin et al. (1971), found higher percentages of PS when children were alone.

Relatively little research has addressed the predicted developmental change in the structure of PS. Preliminary support for the contention that early PS resembles social speech may be found in Furrow's (1984) analysis of the speech of two-year-old children. Berk and Garvin (1984) also noted a positive relationship between the PS and social speech of the youngest children in their sample. Contrary to the expectation that abbreviated PS would occur among older children, Wertsch (1979) reported instances of abbreviated PS among two-year-old children.

Discussion

Given the inconsistent pattern of available results, it is difficult to draw definitive conclusions with respect to the assertion that PS production increases in the presence of others with whom verbal collaboration is possible. While this inconsistency may suggest an absence of support for this portion of Vygotsky's theory, it also may highlight the difficulties inherent in making comparisons across studies that varied so many factors, including task and situational demands, the chronological and mental ages of the subjects, the degree to which the subjects were familiar with those in attendance, the social responsiveness of those in atendance, and the types of PS indices employed. To clarify the extent to which opportunities for verbal collaboration influence PS production, future researchers must include better controls over these potential sources of methodological confounding.

Because there was limited evidence addressing the contention that developmental changes occur in the structure of PS, conclusions regarding this hypothesis also should be withheld until further research is completed. When conducting such research, investigators should attempt to incorporate statistical, rather than qualitative, analyses of the structural similarities and differences between PS and social speech. In addition, consideration should be given to using children whose ages more closely approximate the two to eight year range, so as to allow for the detection of the developmental trends predicted by Vygotsky.

SUMMARY AND CONCLUSIONS

The available evidence failed to support the curvilinear developmental hypothesis when viewed in the context of global PS indices and chronological age. Curvilinear developmental patterns, however, were evident when mental age and specific, self-regulatory types of PS were taken into consideration. In

addition, there were consistent indications of an age-related shift from overt to covert means of verbal self-regulation. The reviewed data also supported the assertion that self-regulatory PS production increases in response to increased task demands. While correlational analyses suggested that increased use of self-regulatory PS is related to more successful mastery of problem-solving tasks, further support for the self-regulatory hypothesis was absent in the studies that more directly examined the degree of correspondence between PS and subsequent problem-solving behavior. Contrary to expectations, differences in self-regulatory PS usage were not apparent between normal children and children described as either impulsive, hyperactive, or aggressive. However, these latter types of children did engage in relatively more task-irrelevant PS. Preliminary support was found for the interpsychological to intrapsychological shift hypothesis. Inconsistent findings hindered an interpretation of the extent to which the presence of others influences PS production and structure. Finally, there was insufficient evidence to determine whether PS undergoes developmental changes in its structure.

Given that the above findings provide support for some but not all of the PS hypotheses under consideration, the overall validity of Vygotsky's theoretical framework may be called into question. Such a conclusion, however, must be tempered by a consideration of the numerous methodological and statistical difficulties that were apparent within and across the reviewed studies. These difficulties include a failure to control for situational factors (i.e., task difficulty, presence of others) that may influence the incidence of PS, cross-study differences in the labels used to identify PS categories, unreliable procedures for measuring PS, and a reliance upon correlational analyses for establishing causal relationships. Until these and other sources of potential confounding are controlled more effectively, it may be best to postpone any final verdict on Vygotsky's PS views.

In addition to its impact upon developmental theory, clarification of Vygotsky's viewpoint bears impact upon the use of clinical treatment approaches, such as Meichenbaum's (1977) cognitive self-instructional training (CSIT) program, that are derived from these theoretical premises. For example, because there seems to be support for the contention that self-regulatory PS production increases in response to increased task demands, it may be important for clinicians to select training materials and situations that are sufficiently challenging for children receiving CSIT. Also, in view of the findings that suggest that some children may not display correspondence between their PS and subsequent action, it may be necessary for clinicians to incorporate intervention strategies, such as reinforcement/response cost procedures, that serve to promote better correspondence.

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